Complete Publication:

Refereed Journal Papers (reviewed by peer review)

A. Larraza and S. Putterman, "Theory of nonpropagating hydrodynamic solitons," Phys. Lett. **103**, 15 (1984).

A. Larraza and S. Putterman, "Theory of nonpropagating surface wave solitons," J. Fluid Mech. **148**, 443 (1984).

A. Larraza, S. Putterman, and P.H. Roberts, "A universal 1/f power spectrum as the accumulation point of wave turbulence," Phys. Rev. Lett. **55**, 897 (1985).

A. Larraza and S. Putterman, "Second sound in wave turbulence: A clue to the cause of anomalous plasma diffusivity," Phys. Rev. Lett. **57**, 2810 (1986).

A. Larraza and M. B. Walker, "Amplitude-mode polaritons in the incommensurate phase of quartz," Phys. Rev. B **39**, 2506 (1989).

B. Denardo and A. Larraza, "A geometrical approach to the sums of uniform random variables," Am. J. of Phys. **57**, 749 (1989).

A. Larraza and M. B. Walker, "Surface phason modes in incommensurate crystals," Phys Rev. B **40**, 977 (1989).

A. Larraza, S. L. Garrett, and S. Putterman, "Dispersion relations for gravity waves in a deep fluid: Second sound in a stormy sea," Phys. Rev. A **41**, 3144 (1990).

B. Denardo, W. Wright, S. Putterman, and A. Larraza, "Observation of a kink soliton on the surface of a liquid," Phys. Rev. Lett. **64**, 1518 (1990).

B. Denardo, B. Galvin, A. Greenfield, A. Larraza, S. Putterman, and W. Wright, "Observations of localized structures in nonlinear vibratory lattices: Domain walls and kinks," Phys. Rev. Lett. **68**, 1730-1733 (1992).

M. Abreu, A. Larraza, and E. Thornton, "Nonlinear transformation of directional wave spectra in shallow water," J. Geophys. Res, **97**(C10), 15579-15590 (1992).

B. Denardo, A. Larraza, S. Putterman, and P. Roberts, "Nonlinear theory of localized standing waves, " Phys. Rev. Lett. **69**, 597-600 (1992).

A. Larraza and G. Falkovich, "Collective modes in open systems of nonlinear random waves," Phys. Rev. B. **48**, 9855-9857 (1993).

A. Larraza and W. Coleman, "Solitons, pulse splitting, and AM-FM conversion in cylindrical ducts," J. Acoust. Soc. Am. **100**, 139-147 (1996).

A. Larraza, B. Denardo, and A. Atchley, "Absorption of sound by noise in one dimension," J. Acoust. Soc. Am. **100**, 3554-3560 (1996).

A. Larraza and B. Denardo, “Acoustic waveguides as tools in fundamental nonlinear

physics," J. Acoust. Soc. Am. **101**, 27–28 (1997).

A. Larraza, C. D. Holmes, R. T. Susbilla, and B. Denardo, "The force between two parallel rigid plates due to the radiation pressure of broadband noise: An acoustic Casimir effect," J. Acoust. Soc. Am. **103**, 2267–2272 (1998).

A. Larraza and B. Denardo, "An acoustic Casimir effect," Phys. Lett. A **248**, 151-155 (1998)

A. Larraza, "A demonstration apparatus for an acoustic analog the Casimir effect," *Am. J. Phys.* **67**, 1028-1030 (1999).

A. Larraza and E. Tucholski, "Acoustic Einstein–Hopf drag on a bubble." *Phys. Rev. Lett.* **84**, 2378-2380 (2000).

M. Heinemann, A. Larraza, and K. B. Smith "Acoustic communications in an enclosure using single-channel time-reversal acoustics." *Appl. Phys. Lett.* **80**, 694-696, (2002).

Submitted articles

M. Heinemann, A. Larraza, and K. B. Smith, "Experimental studies of applications of time–reversal acoustics to non-coherent underwater communications." Submitted to the *Journal of the Acoustical Society of America*

Smith, K.B., Abrantes, A.A.M., and Larraza, A., "Examination of time-reversal acosutics in shallow water and applications to noncoherent underwater acoustic communications." Submitted to the *Journal of the Acoustical Society of America.*

Patents Pending

B. Galvin and A. Larraza, "Method for using affinity matrices to profile behavior of users of highly networked systems." Patent Application 09/489,326 filed Feb 2000 in the USPTO

B. Galvin and A, Larraza, "Method for identifying reference-independent patterns," Patent Application 09/566,773 filed May 2000 in the USPTO

Articles in preparation

A. Larraza and E. Tucholski, "Bjorkens forces on bubbles in broadband acoustic noise."

B. Denardo, A. Larraza, and T. Simmons , "An acoustic radiometer."

A. Larraza and B. Denardo, "The Wilberforce pendulum lattice: A model system for mode level repulsion."

A. Larraza, “Collective modes in nonlinear random deep gravity waves.”

Invited conference papers and presentations

S. Putterman, A. Larraza, and P. H. Roberts, "Universal Power spectra for acoustic turbulence," J. Acoustical Soc. of Am. Suppl. 1 **80**, S90, QQ7 (1986).

A. Larraza, B. Denardo, and S. Putterman, "Nonpropagating solitons," Workshop V on (nonlinear) stability, Book of Abstracts, ed. D. K. Callebaut, University of Antwerp, Belgium (1989).

A. Larraza, S. L. Garrett, and S. Putterman, "Universal power spectra for wave turbulence: Applications to wind waves, solar wind spectrum, and classical second sound," Workshop V on (nonlinear) stability, Book of Abstracts, ed. D. K. Callebaut, University of Antwerp, Belgium (1989).

A. Larraza, "Classical quantization of the irregular billiards, "Workshop V on (nonlinear) stability, Book of Abstracts, ed. D. K. Callebaut, University of Antwerp, Belgium (1989).

Bruce Denardo, Andrés Larraza, and Charles McClelland, "Kink-assisted mode hopping in a resonaror," J. Acoust. Soc. Am. **91**, Pt.2, 2PA2 (1992).

A. Larraza, "Some acoustic analogs to electromagnetic zero point field effects: Static and dynamic Casimir effects," *Advanced ICFA beam dynamics workshop on "Quantum aspects of beam physics,"* January 4–9, Monterey, CA (1998).

A. Larraza and K. B. Smith, “Underwater acoustic communications using time-reversal acoustics and match-filtering techniques. 1st Workshop em Acústica Submarina. Instituto de Pesquisas de Marina, Rio de Janeiro, Brazil. 8-10 November 2000.

A. Larraza, “Tank-scale experiments on applications to time-reversal acoustics,” *Workshop on Inverse problems and Applications*, Mathematical Science Research Institute, Berkeley, CA Nov 14-15 (2001).

A. Larraza and E. Tucholski, “Separation techniques using high intensity sound,” V Encontro de Tecnologia em Acústica Submarina. Instituto de Pesquisas de Marina, Rio de Janeiro, Brazil. 21-23 November 2000.

Colloquium and lecture presentations

"Dispersion and attenuation of wind-driven deep gravity waves," Department of physics, Naval Postgraduate School, Monterey, Jan 12 1988.

"Surface-phason modes in incommensurate crystals," Department of Physics, University of Toronto, Canada, Jan 27 1989.

"Nonprogating solitons," Department of Physics, San Jose State University, CA. Nov. 9 1989.

"On nonlinear equations for fields with a level repulsion spectrum", Instituut voor Theoretische Fysica, University of Amsterdam, The Netherlands, Aug. 27, 1990.

"Linear instability and nonlinear saturation: Three examples," Mini-Symposium on Nonlinear Dynamics, University of Mississippi, Oxford MS, Oct. 11, 1990.

"The generation of random surface waves by wind," Department of Physics, Naval Postgraduate School, Monterey, CA, Apr. 12, 1991.

"Physical applications of wave turbulence: Wind waves and classical collective modes," invited lecturer at the Nonlinear Waves and Weak Turbulence Conference (ACBMS-NSF Conference), Case Western Reserve University, Cleveland, Ohio, May 26-May 30 1992.

"Far off equilibrium phenomena in acoustics: Localized states, wave turbulence, and absorption of sound by anisotropic noise," co-lecturer with B. Denardo for the Physical Acoustics Summer School, Asilomar Conference Center, California June 24 - July 1, 1992.

"Wave turbulence and collective modes in open systems of nonlinear random waves," Applied Mathematics Program, University of Colorado at Boulder, January 14. 1993.

"The Boltzmann equation: From particle kinetics to nonlinear random waves," Applied Mathematics Program, University of Colorado at Boulder, January 15. 1993.

"Path integral approach to shoaling waves," Remote Sensing Group, NRL Stennis Space Center, January 21, 1994.

"Pulse splitting and AM-FM conversion in nonlinear dispersive systems," Department of Physics University of Mississippi, Oxford, January 24, 1994.

"Pulse splitting and AM-FM conversion in nonlinear dispersive systems," Department of Physics Naval Postgraduate School, Monterey, CA February 4, 1994

"Collective modes in nonlinear random surface waves," Workshop on Waves in the Ocean, Mathematical Science Research Institute, Berkeley, CA, February 8, 1994.

“Acoustics: Sound of science and science of sound,” Demo presentation by Anthony Atchley, Henry Bass, Robert Keolian, Andrés Larraza, and James Sabatier, at the 160th National Meeting of the American Association for the Advancement of Science, San Francisco, CA, 18 February 1994.

"Two experiments on nonlinear wave interactions," ONR Workshop on Ocean Waves, Mathematics Department, University of Arizona, TZ, March 18, 1994.

“Fundamental aspects of nonlinear waves: Two examples,” Department of Physics, University of California, Santa Cruz, October 4, 1996.

"Acoustics Demonstrations for the Classroom: The Science of Sounds," Demo presentation by Anthony Atchley, Bruce Denardo, Robert Keolian, Andrés Larraza, and James Sabatier, at the 163rd National Meeting of the American Association for the Advancement of Science, Seattle, Washington, 14 February 1997.

"An acoustic Casimir effect," Department of Physics, Naval Postgraduate School, Monterey, August 15 1997.

"An acoustic Casimir effect," Department of Physics, San José State University, March 3 1998.

"The Crookes radiometer: How a toy pushed the frontiers of physic," Department of Physics, Naval Postgraduate School, August 7 1998.

"The Crookes radiometer: How a toy pushed the frontiers of physic," Department of Physics, Sonoma State University, September 11 2000.

"The Crookes radiometer: How a toy pushed the frontiers of physic," Department of Physics, University of California at Santa Cruz , January 18 2001.

"Applications of Time-Reversal Acoustics to Mine Warfare, Sonar Technology, and Underwater Acoustic Communications," Department of Mathematics, Stanford, CA 31 July 2001.

"The Crookes radiometer: How a toy pushed the frontiers of physic," Department of Physics, California State University, September 21 2001.

"Time-Reversed Acoustics," Northern California-Nevada Chapter of the American Association of Physics Teachers Meeting, Naval Postgraduate School, 26-27 October 2001.

Conference presentations with published proceedings (non–refereed)

T. Simmons, B. Denardo, A. Larraza, and R. Keolian, "Acoustic radiometer demonstration," *Proceeding of the 16th International Conference on Acoustics,* Vol 1, Patricia K. Kuhl and Lawrence A. Crum, Editors, 129-130 (1998).

A. Larraza, C. D. Holmes, R. T. Susbilla, and B. Denardo, "An acoustic Casimir effect," *Proceeding of the 16th International Conference on Acoustics*, Vol 1, Patricia K. Kuhl and Lawrence A. Crum, Editors, 131-132 (1998).

A. Larraza and K. B. Smith, "Underwater acoustic communications using time-reversal acoustics and match-filtering techniques. 1st Workshop em Acústica Submarina. Instituto de Pesquisas de Marina, Rio de Janeiro, Brazil. 8-10 November 2000. *Invited presentation.*

Conference presentations with published abstracts

A. Larraza and S. Putterman, "Dispersion and attenuation of wind-driven deep gravity waves," J. Acoustical Soc. of Am. Suppl. 1 **84**, S34, N1 (1988).

B. Denardo, A. Larraza, and S. Putterman, "Observation of a topological kink soliton in a highly complaint waveguide," J. Acoustical Soc. of Am. Suppl. 1 **84**, S34, N2 (1988).

A. Larraza, S. L. Garrett, and S. Putterman, "Dispersion relations for gravity waves in a deep fluid: Second sound in a stormy sea," Bull. Am. Phys. Soc. **34**(10), 2276 (1989).

Charles McClelland, Bruce Denardo, Andrés Larraza, Alan Greenfield, and Seth Putterman, " Observations of standing solitons in a parametrically driven pendulum lattice," J. Acoust. Soc. Am. Suppl. 1 **88**, S75, 4PA6 (1990).

Brian Galvin, Bruce Denardo, and Andrés Larraza, "Numerical studies of standing solitons in a nonlinear lattice," J. Acoust. Soc. Am. Suppl. 1 **88**, S76, 4PA7 (1990).

Andrés Larraza and Bruce Denardo, "Nonlinear evolution equations for fields with a level repulsion spectrum," J. Acoust. Soc. Am. Suppl. 1 **88**, S76, 4PA8 (1990).

M. Abreu, A. Larraza, and E. Thornton, "Nonlinear transformation of directional spectra in shallow water," AGU Meeting, Dec 1991. San Francisco (1991).

Andrés Larraza and Bruce Denardo, "Absorption of sound by noise in one dimension," J. Acoust. Soc. Am. **91**, Pt.2, 2PA3 (1992).

Andrés Larraza, Bruce Denardo, Anthony Atchley, and Steven Dorff, "Absorption of sound by noise in one dimension," J. Acoust. Soc. Am. **93**, Pt.2, 4pPA3 (1993).

Andrés Larraza and Anthony Atchley, "Analysis of a thermoacoustic prime mover above onset of self oscillation," J. Acoust. Soc. Am. **94**, Pt.2, 2aPAa8 (1993).

Andrés Larraza, William Coleman, and Anthony Atchley, "Pulse splitting in a nonlinear waveguide," J. Acoust. Soc. Am. **94**, Pt.2, 5aPA2 (1993).

Andrés Larraza and Bruce Denardo "Absorption of sound by noise in one dimension," J. Acoust. Soc. Am. **99**, No. 4, Pt. 2, 2539 (1996).

Anthony Atchley, Bruce Denardo, Robert Keolian, Andrés Larraza, and James Sabatier, "Acoustics Demonstrations for the Classroom: The Science of Sounds," Program for the 163rd National Meeting of the American Association for the Advancement of Science,14 February 1997, Seattle, Washington, p. S-9.

Vivek Mital and Bruce Denardo, Hyeon Jang, and Andrés Larraza "Numerical simulations of the absorption of sound by noise in one dimension," J. Acoust. Soc. Am. **101**, No. 5, Pt 2, 3080 (1997).

T. Simmons, B. Denardo, A. Larraza, and R. Keolian, "An acoustic radiometer," J. Acoust. Soc. Am. **103**, No. 5, Pt 2, 2763 (1998).

A. Larraza, C. D. Holmes, R. T. Susbilla, and B. Denardo, "An acoustic Casimir effect," J. Acoust. Soc. Am. **103**, No. 5, Pt 2, 2763 (1998).

Abrantes, A.A.M., K.B. Smith, and A. Larraza, "Examination of time–reversal acoustics and applications to underwater communications,"*J. Acoust. Soc. Am*., **105**, 1364 (1999).

Invited Chapters in books (reviewed by editor)

A. Larraza and S. Putterman, "Universal power spectra for wave turbulence: Applications to wind waves and 1/f noise," in *Irreversible Phenomena and Dynamical Systems Analysis in Geosciences*, ed. Nicolis and Nicolis, D. Reidel (1987), 139-144.

A. Larraza and B. Denardo, "On nonlinear equations for fields with a level repulsion spectrum," WASDA IV (Waves and Soliton Days, Antwerp) Conference, ed. D. K. Callebaut and W. Malfliet, University of Antwerp, Belgium (1990).

A. Larraza, "Physical applications of wave turbulence: Wind waves and classical collective modes," in *Nonlinear waves and weak turbulence with applications to Oceanography and Condensed Matter Physics,* edited by N. Fitzmaurice, D. Gurarie, F. McCaughan, W. A. Woyczynski, Birkhauser, Boston (1993), 83-95.

A. Larraza and B. Denardo, "Acoustic waveguides as tools in fundamental nonlinear physics," in Phillip F. Schewe and Ben P. Stein, editors, *Physics News in 1996* (American Institute of Physics, College Park, Maryland, (1997), pp. 2–3

A. Larraza, "Some acoustic analogs to zero point field effects," in *Quantum aspects of beam physics,* edited by P. Chen, World Scientific (1999), pp549-556.

Thesis advised

E. Tucholski, " Applications of large amplitude broadband acoustic noise to acoustophoresis," Ph. D. Dissertation, (September 2001)

J. P. Stokely, "Experimental Studies of Two-Way Single Element Time Reversal in a Noisy Waveguide," M. S. Thesis (June 2001). *Recipient of the NAVSEA Award in Combat Systems.*

C. Athanasiou, "Evaluation of alternative communication scheme using enviromentally adaptive algorithms," M. S. Thesis (June 2001).

Ronald J. Karun, "Analysis of the Waterhammer concept as a mine countermeasure system," M. S. Thesis (September 2000).

M. Heinemann, " Experimental studies of applications of time-reversal acoustics to non-coherent underwater communications," M. S. Thesis (March 2000). *Recipient of the outstanding thesis award.*

D. Liddy and J. Holmes, "Acoustic room de-reverberation using time–reversal acosutics" M. S. Thesis (September 1999). *Recipient of the outstanding thesis award.*

A. A. M. Abrantes, "Examination of time-reversal acoustics in shallow water and applications to underwater communications," Master's Thesis (June 1999), joint advisor with Kevin B. Smith and Monique Fargues. *Recipient of the outstanding thesis award.*

E. J. Chan, "Acoustic–induced drag on a bubble," M. S. Thesis (March 1999).

D. S. Grennek, "Amplitude modulation using a nonlinear optical loop mirror," M. S. Thesis (December 1998). *Co-recipient of the Space System Engineering Award for Academic Excellence.*

C. D. Holmes, "Acoustic Casimir effect," M. S. Thesis (June 1997). *Recipient of the outstanding thesis award.*

M. A. Lamczyk and J. Park, "Experimental and numerical investigations of the gaussian suppression of sound by sound," M. S. Thesis (June 1997).

R. T. Susbilla, "Casimir Acoustics," M. S. Thesis. (December 1996). *Recipient of the outstanding thesis award.*

H. J. Jang, "Numerical simulations of shockless nonlinear acoustic noise in one dimension," M. S. Thesis. (December 1996).

J. W. Darwood, "Non-electro-optic methods of high frequency laser modulation," M. S. Thesis, joint advisor with D. S. Davis. (December 1996).

M. M. Navarro, "Ocean wave data analysis using Hilbert transform techniques," M. S. Thesis. (December 1996).

J. R. Tucker, "High frequency characterization of the Gsanger LM0202P electro-optic modulator," M. S. Thesis, joint advisor with D. S. Davis and S. Gnanalingham. (December 1996).

M. C. Ladner, "Optical modulator LM 0202 P characteristics: Application to amplitude modulation of Argon-Ion laser," M. S. Thesis, joint advisor with S Gnanalingam. (June 1996).

H. C. Wallace, "Optical characteristics of lexel 85 argon-ion laser and Gsanger LM 0202 P modulator: Application to AM-FM light conversion," M. S. Thesis, joint advisor with D. S. Davis. (June 1996).

P. A. Gill, "An experimental study of collective sea state modes of deep water surface gravity waves," M.S. Thesis, co-advisor with R. Keolian. (December 1994).

W. F. Coleman, "Group velocity splitting and AM-FM conversion in nonlinear dispersive media," M.S. Thesis (December 1993). *Recipient of the Naval Sea Systems Command Award for Excellence in Weapons Engineering for the Fall quarter of 1993.*

C. B. McClelland, "Kink-assisted mode hopping in a surface wave resonator," M. S. Thesis, joint advisor with B. Denardo (June 1992*). Recipient of the Navy League award in Spring quarter of 1992.*

S. J. Dorff, "Apparatus for measuring the absoption of sound by noise in one dimension," M. S. Thesis, joint advisor with B. Denardo and A. Atchley (Dec 1991).

C. A. Walden, "Numerical studies of breather solitons in nonlinear vibratory lattices," M. S. Thesis, joint advisor with B. Denardo (Dec 1991).

K. M. Blum, "Acoustically probed Taylor-Couette flow apparatus," M. S. Thesis, joint advisor with A. Atchley (Dec 1991).

M. A. Abreu, "Nonlinear transformation of directional spectra in shallow water," Ph.D. Dissertation, co-advisor with E. Thornton (Sep, 1991).

B. R. Galvin, "Numerical studies of localized vibrating structures in nonlinear lattices," M.S. Thesis, joint advisor with B. Denardo (Mar, 1991).

Non-refereed technical reports

B. Denardo, A. Larraza, R. Keolian, and S. Garrett, “Wave turbulence and Soliton Dynamics,” Technical report, NPS-PH-92009 (1992).